

WHAT IS CLAIMED IS:

1. A bipolar transistor (BJT) with reduced base-collector capacitance comprising
  - 5 an extrinsic base, and a lateral trench beneath the extrinsic base.
  2. A BJT of claim 1, wherein the trench is filled with air.
  3. A BJT of claim 1, wherein the trench is filled with an insulator.
  4. A BJT of claim 3, wherein the insulator is a high step coverable
    - 10 insulating material.
  5. A BJT of claim 4 wherein the insulator is PETEOS.
  6. A BJT of claim 1, wherein the trench has a <110> orientation.
  7. A BJT of claim 6, wherein the trench is formed in a <100> silicon wafer.
- 15 8. A method of forming a laterally extending trench in a semiconductor material underneath an extrinsic base of a BJT, comprising
  - choosing a predetermined crystal orientation,
  - etching a vertically extending STI region next to the extrinsic base, and
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  - using an anisotropic etchant to etch the laterally extending trench to extend laterally from the STI.
9. A method of claim 8, wherein choosing the crystal orientation includes choosing a wafer with a <100> orientation.
10. A method of claim 8, wherein the choosing of the crystal orientation includes choosing a lateral trench direction that is in the <110> direction.
- 25 11. A method of claim 10, wherein the semiconductor material is silicon.
12. A method of claim 11, wherein the etchant is a wet anisotropic silicon etchant.
13. A method of claim 12, wherein the etchant includes KOH.

14. A method of claim 13, wherein the etchant further includes alcohol and water.

15. A method of claim 12, wherein the etchant includes TMAH.

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